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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/550,514	09/23/2005	Sylvain Schwartz	4590-443	3006
33308	7590	11/05/2007		
LOWE HAUPTMAN & BERNER, LLP 1700 DIAGONAL ROAD, SUITE 300 ALEXANDRIA, VA 22314			EXAMINER ZHANG, YUANDA	
			ART UNIT 2828	PAPER NUMBER
			MAIL DATE 11/05/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/550,514	Applicant(s) SCHWARTZ ET AL.	
	Examiner Yuanda Zhang	Art Unit 2828	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 August 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date: _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date: _____   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments filed 08/09/07 have been fully considered but they are not persuasive.
2. In response to Applicant's argument that the prior art does not disclose two counter-propagation modes, the Examiner disagrees with the Applicant's and the prior art clearly shows two counter-propagation modes. Figure 28(a) and 28(b) show equivalent two counter-propagation modes required by claim 1, which recites "two counter-propagation modes to be kept almost the same" (col. 28 lines 37-48). Since the Applicant's not explicitly defined that the two counter-propagation modes have to occur at the same time, the Examiner interprets that they propagate one at a time in opposite directions.
3. In response to Applicant's argument that claim 10 recites additional limitation, the Examiner disagrees with the Applicant's since Aronowitz'034 does cure the deficiency of Nilsson'764 by providing the additional limitation of "an induction coil controlled by an adjustable electrical current" (see office action below).

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-9 and 11-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Nilsson (US Patent 5,177,764).

6. In re claim 1, Nilsson discloses a unidirectional planar ring laser comprising: an optical ring cavity including at least three mirror, a solid-state amplifying medium and a feedback system, the cavity and the amplifying medium being such that two counter-propagating optical modes can propagate in opposite directions one with respect to other inside said optical cavity (inherent due to non-reciprocal rotation and reciprocal rotation), the feedback system allowing the intensity of the two counter-propagating modes to be kept almost the same (due to an unidirectional oscillation and the two modes can be propagating on at a time in opposite directions), the feedback system comprising, inside the cavity, an optical assembly including a polarizing element and a device (Faraday rotator, non-reciprocal rotation) exhibiting a nonreciprocal effect that acts on the polarization sate of the counter-propagating modes, wherein said optical assembly further includes a device (Birefringence, reciprocal rotation) exhibiting a reciprocal effect that also acts on the polarization sate of the counter-propagating modes, the feedback system comprising control means for controlling at least one of the effects of said devices (see abstract).

7. In re claims 2 and 3, Nilsson discloses the linear polarizer (Col. 2 lines 30-33) is one of the mirrors of the cavity (inherent).

8. In re claim 4, Nilsson discloses the linear polarizer is an inclined glass plate, the angle of inclination on the optical modes then being approximately equal to the Brewster angle (Col. 7 lines 55-62).

9. In re claims 5-7, Nilsson discloses the reciprocal rotator, a birefringent optical plate in a non-planar cavity, exhibiting a reciprocal effect is a second linear polarizer (reciprocal polarization), the polarization direction of which is not parallel to that of the first polarizer (Col. 8 lines 50-54), the feedback system consists of means for adjusting the non-reciprocal effect of the device exhibiting a non-reciprocal effect (Col. 9 lines 5-38).

10. In re claim 8, Nilsson discloses a reciprocal effect is an optical plate exhibiting electrically controlled birefringence (Col. 9 lines 34-36).

11. In re claim 9 Nilsson discloses a nonreciprocal effect consists of a material exhibiting the Faraday effect and polarized by a permanent magnet, the feedback system consists of means for adjusting the reciprocal effect of the device exhibiting a reciprocal effect (Col. 4 lines 5-25).

12. In re claim 11, Nilsson discloses the amplifying medium and the material exhibiting the Faraday effect are produced in the same material (birefringent material is made of YAG which is the same as solid-state laser medium, Nd:YAG; Col. 9 line 23).

13. In re claim 12, Nilsson discloses the cavity is monolithic, the counter propagating optical modes propagating, inside the cavity, only in a solid material (see abstract).

14. In re claim 13, Nilsson discloses the amplifying medium is Nd:YAG (see description of the prior art section).

15. In re claim 14, Nilsson discloses the cavity is optically pumped by at least one diode laser (see description of the prior art section).

***Claim Rejections - 35 USC § 103***

16. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

17. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nilsson (US Patent 5,177,764) in view of Aronowitz (US Patent 3,867,034).

18. In re claim 10, Nilsson has disclosed the claimed invention above except an induction coil controlled by an adjustable electrical current.

19. However, with reference to figure 1, Aronowitz discloses an induction coil controlled by an adjustable electrical current (Col. 3 lines 14-38).

20. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the ring laser of Nilsson with an induction coil as taught by Aronowitz in order to eliminate temperature and stray magnetic field effects by alternating the direction of the magnetic field (Col. 1 lines 55-60).

21. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nilsson (US Patent 5,177,764) in view of Brasseur et al (US Patent 6,731,423 B1).

22. In re claim 15, Nilsson has disclosed the claimed invention above except the cavity comprises at least one optical fiber in the form of a ring, which includes optical couplers for the entry and exit of the counter-propagating beams and of at least one optical pump beam.

23. However, Brasseur et al disclose an optical fiber ring having a first end (64) is coupled to a first end (entry) of the Raman chamber. A second end (exit) of the optical fiber is coupled to a second end of the Raman chamber (cavity) (Col. 2 lines 12-15).

24. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the ring laser of Nilsson with an optical fiber ring as taught by Brasseur et al in order to obtain a desired high output power by eliminating the spatial modes (Col. 2 lines 18-19).

### ***Conclusion***

25. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yuanda Zhang whose telephone number is 571-270-


Art Unit: 2828

1439. The examiner can normally be reached on Monday-Thursday, Alternating Fri  
8:30am-6:00p EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun Harvey can be reached on 571-272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

YZ  
10/18/07

  
**MINSUN OH HARVEY  
PRIMARY EXAMINER**